OPTICAL
SYSTEMS
DESIGN

OPERATOR MANUAL

OSD461A/OSD463A

AUDIO

FIBER OPTIC TRANSMISSION SYSTEM

OSD461A/OSD463A

AUDIO

FIBER OPTIC TRANSMISSION SYSTEM

Document No. 101052 Rev. 01

INDEX 1

1 TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

1.1.1 APPLICATIONS

- Networks requiring only one way audio transmission.

1.1.2 FEATURES AND BENEFITS

- Fiber optic transmission of audio signals.
- Operating range of over 5km on multimode fiber and 50km on singlemode fiber with standard devices and greater than 100km with optional lasers.
- Immunity to electrical interference, low radiation with complete end-to-end isolation
- Safe transmission in hazardous environments

1.1.3 PRODUCT DESCRIPTION

The OSD461A/463A series is a fiber optic transmission system for quality audio signals. The OSD461A/463A system is comprised of the OSD461A fiber optic audio transmitter and the OSD463A fiber optic audio receiver, which are designed to operate as a pair, forming the audio transmission system.

The OSD461A transmitter unit consists of an optical transmitter section that transmits audio.
The OSD463A receiver unit consists of a high-performance optical FM receiver. The unit provides a constant audio output level that is independent of link loss.

The OSD461A/463A are available in three physical configurations: card, stand-alone case or a 1RU rack mount. The card versions are designed to fit the 3RU-high 19" OSD370 chassis, which allows multiple OSD card products to be conveniently powered from and located in the one chassis. The stand-alone case versions are intended for isolated use and require an external DC or AC power source. The 1RU version is an OSD461A/463A units containing a power supply that can be connected directly to mains power. The OSD461A is normally supplied in the standalone case configuration for mounting at each remote location, while the OSD463A is normally supplied as a card to allow multiple receiver units to be powered from and contained in the OSD370 chassis or 1RU case.

The OSD461A/463A system can be used with any standard multimode optical fiber, and is available optionally for singlemode fiber use.

1.2 TYPICAL CONFIGURATION

FIGURE 1 below indicates a possible set-up for an OSD461A/463A system

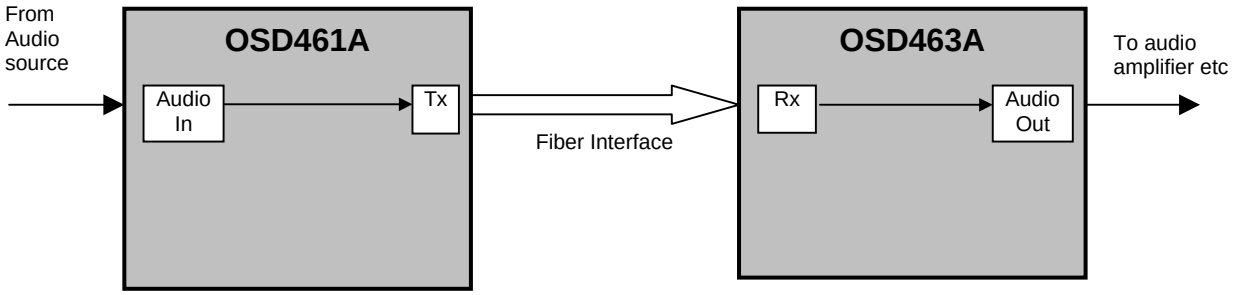


FIGURE 1: OSD461A/463A CONFIGURATION

1.3 TECHNICAL SPECIFICATIONS

Table below provides Technical Specifications for the OSD461A/463A.

TABLE 1: TECHNICAL SPECIFICATIONS

NO	SPECIFICATION	PERFORMANCE
1	Input/Output Impedance	600Ω
2	Input/Output Level	2.5Vp-p max
3	Audio Connector	BNC Socket
4	Bandwidth	15Hz to 20kHz ± 1dB
5	Weighted Signal to Noise Ratio	>60dB at –30dBm received optical power >55dB at –35dBm received optical power
	Total Harmonic Distortion	≤1.5% at 1kHz
9	Power Connector	2 way terminal block
10	Transmitter Wavelength	850 ± 30nm (multimode) 1300 ± 30nm (optional singlemode)
11	OSD461A Transmitter Coupled Power	>-15dBm peak into 62.5/125um multimode fiber >-20dBm peak into 9/125um singlemode fiber (OSD461AL only)
13	OSD463A Receiver Saturation	>-10dBm
14	Receiver Operating Wavelength	800 to 900nm (1270 to 1580nm for OSD461AL and OSD463AL)
15	OSD463A Sensitivity	<-35dBm for >55dB SNR
16	Transmission Distance	>5km for multimode, >40km for singlemode
18	Optical Connectors	ST standard, others optional
19	Power Requirements (card)	+10V to +24V DC or AC at 200mA max
20	Dimensions of Module (mm)	100W x 100D x 25H (excludes flanges and optical connectors)
21	Weight of Module (kg)	0.4
22	Dimensions of card (mm)	25W x 210D x 100H (excludes flanges and optical connectors)
23	Weight of Card (kg)	0.2
24	Dimensions of 1RU (mm)	482W x 215D x 44H (excludes flanges and optical connectors)
25	Weight of 1RU (kg)	2.6
26	Operating Temperature	-20 to 75°C
27	Relative Humidity	0 to 95% non-condensing

2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD461A/463A successfully. It should be studied carefully if damage to the equipment or poor results are to be avoided.

This equipment has been fully tested prior to dispatch and is ready for immediate operation. However it is advisable to check for external transportation damage before operation. If damage is evident, return the unit with the packaging to your supplier immediately.

2.2 INSTALLATION

2.2.1 WARNING AND PRECAUTIONS

ELECTROMAGNETIC COMPATIBILITY

WARNING: This is a **Class A product**. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

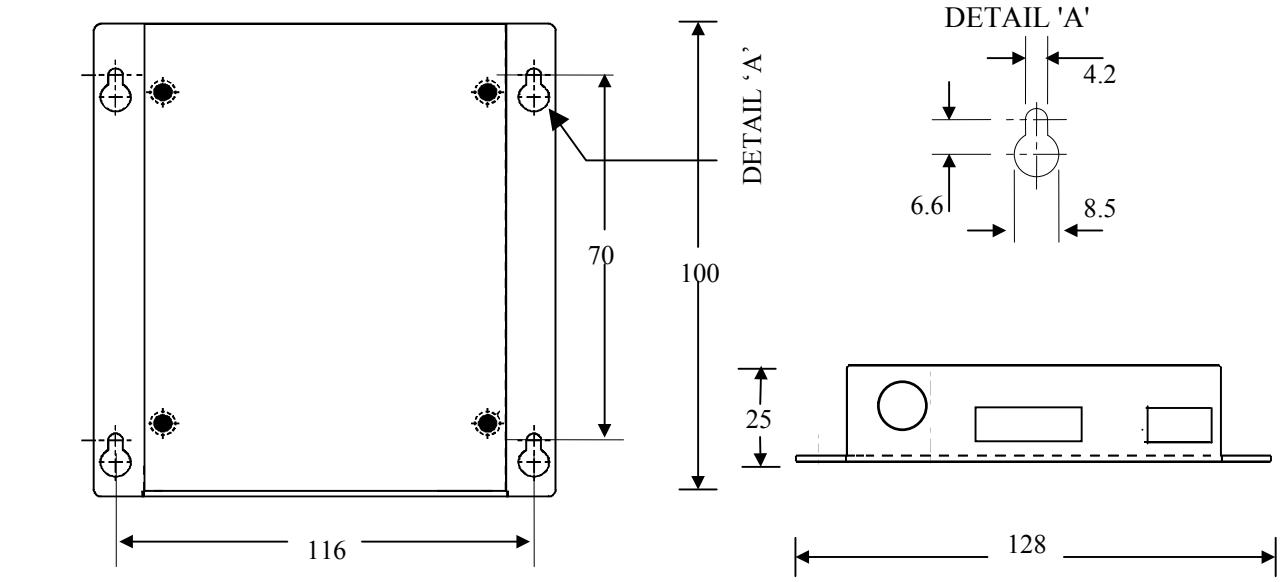
OPTICAL OUTPUT OPERATION

Class 1	Class 3A
The multimode version of the OSD461A/463A is a **Class 1 LED product**. Wavelength of 850nm and <-8dBm power output.	The singlemode version of the OSD461A/463A is a **Class 3A laser product.** Wavelength of 1310nm and <+5dBm power output or wavelength of 1550nm and <+7dBm power output.
	

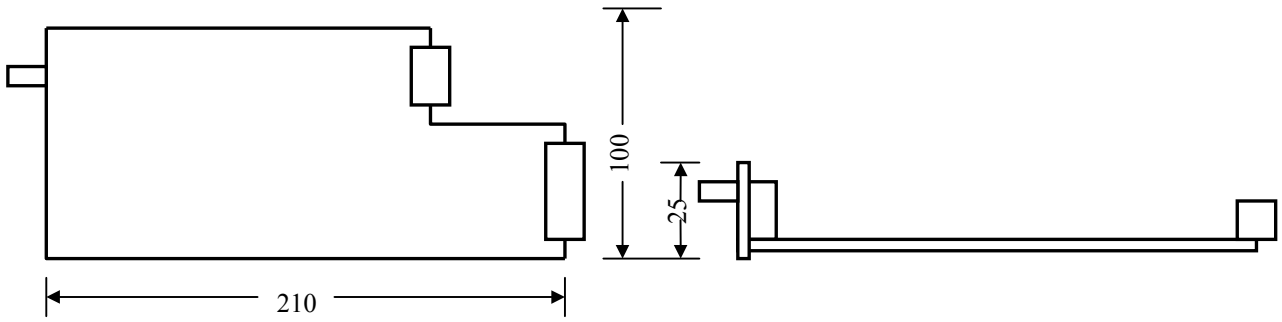
- ▲ All service personnel should be provided training as to the hazards of direct viewing of laser radiation and of the precautionary measures during servicing of equipment
- ▲ Areas where laser products are installed should be restricted in access to trained service personnel only and appropriate warning signs posted in the work area.
- ▲ All laser apertures should be covered by protective covers when not connected to optical fibers. Never leave outputs uncovered.
- ▲ Laser equipment should be positioned above or below eye level where possible. Apertures should be positioned away from personnel.
- ▲ Protective eyewear should be worn in the vicinity of laser equipment.

2.2.2 OSD461A/463A DRAWINGS AND DIMENSIONS

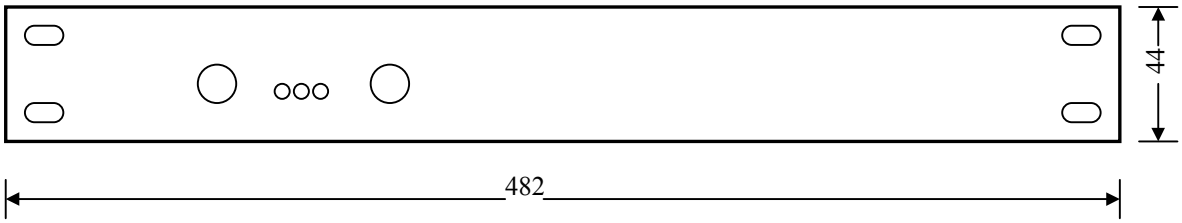
The OSD461A/463A stand-alone version should be mounted on an even surface and secured by means of M4 or smaller screws. Figure 3(a) is an outer case drawing showing the required mounting dimensions.



(a) Module Version



(b) Card Version



(c) 1RU Version

FIGURE 2: OSD461A/463A DIMENSIONS

2.2.3 POWER SUPPLY CONNECTIONS

The OSD461A/463A card version is powered from the OSD370 chassis.

The OSD461A/463A 1RU version uses an IEC connector for mains power.

It is important to read the following information for proper operation and avoid damage to the unit.

The OSD461A/463A module requires external DC or AC power. The acceptable DC voltage range is +10 to +24V DC or AC, with maximum current output of 200mA. Power should be connected to the 2 way socket located at the back of the case. Take care to connect DC power with the correct polarity: Pin 2 is 0V and Pin 1 is positive for DC power.

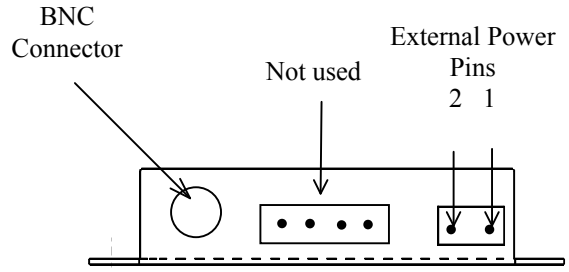


FIGURE 3: OSD461A/463A 2 PIN POWER SUPPLY CONNECTION DIAGRAM

For AC supplies the polarity is not applicable. NOTE: For AC power, Pin 2 **must not** be grounded. The OSD461A/463A has a full bridge rectifier circuit, grounding Pin 2 will short half the bridge circuit (Figure) and damage the product!

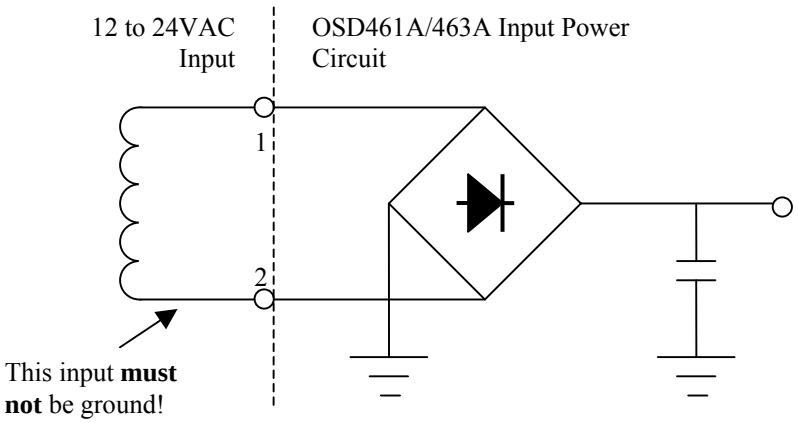


FIGURE 4: OSD461A/463A AC INPUT VOLTAGE DIAGRAM

2.2.4 OSD461A CONNECTIONS

For the stand-alone version, connect the OSD461A to an appropriate power source. For card versions, install the unit into the OSD370 chassis. Once the power source is switched on, check that the indicators illuminate. Check that the “Laser” indicator is illuminated green. If it is red, there may be a problem with the unit and it should not be used.

Connect a BNC terminated coax cable from the audio source to the OSD461A.

Connect the optical plugs on the optical cable to the receptacles located on the side of the case or on the front panel of the card version. When the remote OSD463A is connected the "Link OK" indicator should change from red to off.

The optical fiber cable must be terminated with the appropriate optical connector. Before connection, inspect the ends of the connectors to ensure that no dust or dirt is present as it could contaminate the modem connector and result in poor performance.

If it is necessary to clean the cable connectors use isopropyl alcohol and lint free tissue to remove contamination.

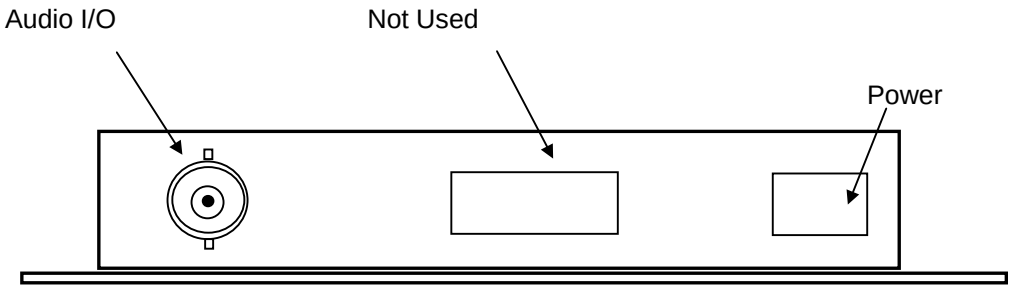


FIGURE 5: OSD461A/463A STANDALONE REAR VIEW

2.2.5 OSD463A CONNECTIONS

For the stand-alone version, connect the OSD463A to an appropriate power source. For card versions, install the unit into the OSD370 chassis.

Connect a BNC terminated coax cable from the OSD463A to the audio amplifier input.

Connect the optical plugs on the optical cable to the receptacles located on the side of the case or on the front panel of the card version. If the received optical power is sufficient the “Link OK” indicator will change from red to off.

2.2.6 INDICATORS

The indicator function of the OSD461A/463A system is summarized in Table 2 and Table 3. Figure 6 shows the LED allocation and their display function.

TABLE 2: OSD461A INDICATOR FUNCTION

OSD461A	**INDICATOR COLOR**	
INDICATOR NAME	**GREEN**	**RED**
Laser	Normal Laser Operation	Laser or Laser Driver Fault

TABLE 3: OSD463A INDICATOR FUNCTION

OSD463A	**INDICATOR COLOR**	
INDICATOR NAME	**OFF**	**RED**
Link OK	Optical power O.K.	Low Optical power

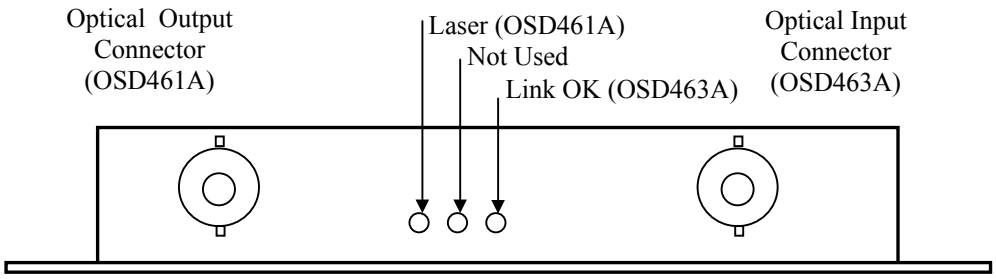


FIGURE 6: OSD461A/463A INDICATORS

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD461A/463A modems. Please take note of the following:

- ▲ Personnel without appropriate training should not attempt any maintenance except that outlined in Section 3.2.
- ▲ If further maintenance is attempted you are warned that every care should be taken to ensure that internal measurements made while the equipment is operational are taken carefully as some components within the unit are expensive and may be damaged by failure of any portion of their support circuitry.
- ▲ Some components within the unit are Electrostatic (ES) sensitive and Electrostatic Discharge (ESD) precautions should be taken when performing maintenance upon the unit.

3.2 EXTERNAL INSPECTION

Visually check for the following:

- ▲ Check that the correct power source is connected to the power socket.
- ▲ Check that the data signals are connected to the modem correctly and that the distant modem has been terminated correctly to any external equipment.
- ▲ Inspect the optical connectors for any contamination and clean using isopropyl alcohol and a lint free tissue if any contamination is detected.
- ▲ Check that any external termination resistors are connected if the system configuration requires them.

3.3 ROUTINE MAINTENANCE

- ▲ There is no routine maintenance required with the OSD461A/463A.

4 WARRANTY

Thank you for purchasing equipment designed, manufactured and serviced by Optical Systems Design (OSD). OSD warrants that at the time of shipment, its products are free from defects in material and workmanship and conforms to specifications. Our Warranty conditions are outlined below:

4.1 WARRANTY PERIOD

For warranty period, please call your local OSD distributor.

4.2 REPAIRS

Optical Systems Design reserves the right to repair or replace faulty modules/units. Please obtain a "Return Material Authorisation" (RMA) form and number before returning goods.
Goods must be returned in adequate packing material to Optical Systems Design, Warriewood or its nominated authorised representative, for all repairs.

4.2.1 WARRANTY REPAIRS

Return shipments to OSD shall be at customer's expense and freight back to the customer will be at OSD expense.

4.2.2 OUT-OF-WARRANTY REPAIRS

OSD reserves the right to repair or replace any faulty goods. Freight costs and insurance for both journeys are met by the user. All equipment repaired by OSD will have a 3-month warranty from the date of dispatch.

4.2.3 SITE REPAIRS

By agreement site repairs may be undertaken for which out of pocket, hotel and travel expenses will be charged.

4.2.4 EXCLUSIONS

This warranty does not apply to defects caused by unauthorized modifications, misuse, abuse or transport damage to the equipment. All modifications to OSD's standard product will need written authorization and will be charged at normal repair rates. All modifications are to be carried out by OSD Technicians. Warranty is void if unauthorized removal and/or tampering with serial number and/or repair labels is evident.

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